

2021 Consumer Confidence Report



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The Water Utilities Division of Tempe's Municipal Utilities Department supports public health, quality of life and economic vitality by providing superior customer service and reliable, high quality water and wastewater services to all Tempe water customers. These services are accomplished through the effective management, operation and maintenance of numerous complex infrastructure systems, rigorous testing and compliance with environmental regulations, maintaining a robust water resources portfolio, and ensuring the financial health of the city's water and wastewater utilities.

Each year, the City of Tempe produces an annual Consumer Confidence Report that contains information regarding the quality of potable water provided by the City of Tempe. Information includes the origin of Tempe's water supply, possible constituents in the water, and how the concentration of those constituents in the potable water provided to customers compares to the standards set by the Environmental Protection Agency (EPA) under the Safe Drinking Water Act (SDWA).

The purpose of this report is to familiarize water customers with Tempe's daily efforts to meet water quality and quantity demands and to provide a comprehensive understanding of the water utility's operations.

El informe contiene información importante sobre la calidad del agua en su comunidad. Tradúzcalo o hable con alguien que lo entienda bien. Pongase en contacto con el Departamento de Comunicaciones de la Ciudad de Tempe al 480-350-4311.

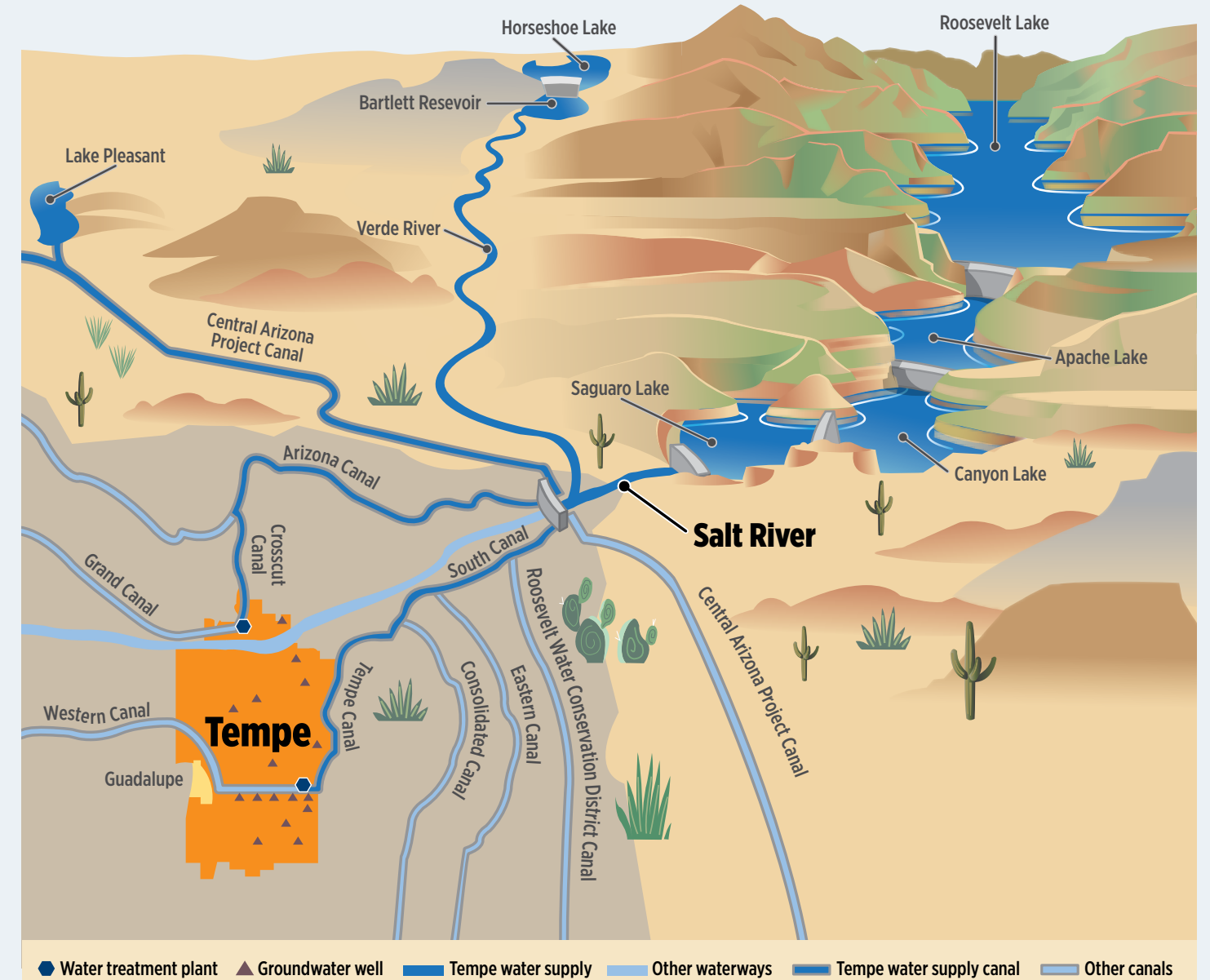
If you are responsible for providing water to others at your facility, such as tenants, residents, patients, students or employees, post this report in a visible location or provide it to them through direct, hand delivery, mail or email.

In 2021, the City distributed 15 billion gallons of potable water to Tempe and Guadalupe customers, averaging approximately 42.3 million gallons per day. In addition to required sampling and monitoring, the results of which are provided in this report, potable water is routinely monitored for additional constituents to ensure Tempe's potable water is safe and of the highest quality.



Plant Operator checks disinfection equipment.

Water Sources



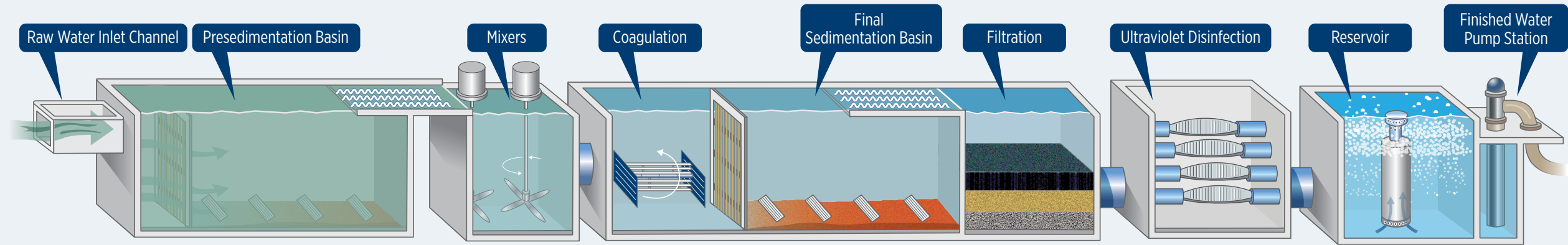
Tempe's water supply comes from several sources.

Salt River Project (SRP) – Surface water is collected from the Salt and Verde River watersheds, stored in six SRP reservoirs and diverted into SRP canals at Granite Reef Dam in Mesa, Arizona. The allocation of SRP water available to the SRP member lands within the Tempe Water Service Area varies year to year as it depends on the amount of runoff from the watershed and the amount of water stored in SRP reservoirs. SRP water supplied to Tempe in 2021 was 12.3 billion gallons, an average of 33.8 million gallons per day, accounting for approximately 80% of water used in the water service area. SRP supplements surface water supply through groundwater wells. In 2021, SRP groundwater supplied to Tempe was a nominal portion of the total water supplied.

Groundwater – In 2021, Tempe used 10 groundwater wells to supplement surface water supplies. Tempe withdrew approximately two billion gallons of water from wells in 2021, for an average of 5.5 million gallons per day. This source provided 13% of water used in the Tempe Water Service Area in 2021.

Central Arizona Project (CAP) – Colorado River water is delivered to Tempe through the CAP water transmission and delivery system to central Arizona, including the Phoenix and Tucson metropolitan areas. In 2021, Tempe used 1.1 billion gallons, or approximately three million gallons per day, of Colorado River water delivered by CAP to meet potable municipal demands. This source provided 7% of the water used in the Tempe Water Service Area in 2021.

Surface Water Treatment Process



In 2021, the majority of Tempe’s potable water was produced at two conventional surface water treatment plants, Johnny G. Martinez Water Treatment Plant (JGMWTP) and South Tempe Water Treatment Plant (STWTP). Each plant has the capacity to produce 50 million gallons of potable water per day. The plants are staffed 24 hours a day and one or both plants are in operation every day of the year. Tempe Water Operations treats water

coming into the treatment plants in order to meet all Safe Drinking Water Act Standards, through chemical coagulation, mechanical flocculation, sedimentation, filtration, and ultraviolet and sodium hypochlorite disinfection. The treated water is stored in the water treatment plant reservoirs until demand dictates it be pumped into the distribution system.

Water Distribution, Wastewater Collection, Stormwater Conveyance and Flood Irrigation

Once treated, water leaves the plant and enters the water distribution system to be delivered to customers. The water distribution system extends throughout Tempe and Guadalupe and includes approximately 860 miles of potable water distribution mains, about 44,000 water meters, over 9,400 fire hydrants and 28,800 water valves, which must be frequently exercised and maintained to ensure the safe and reliable delivery of potable water.

Tempe’s stormwater conveyance system includes approximately 185 miles of stormwater mains, over 3,600 catch basins and 1,700 stormwater manholes.

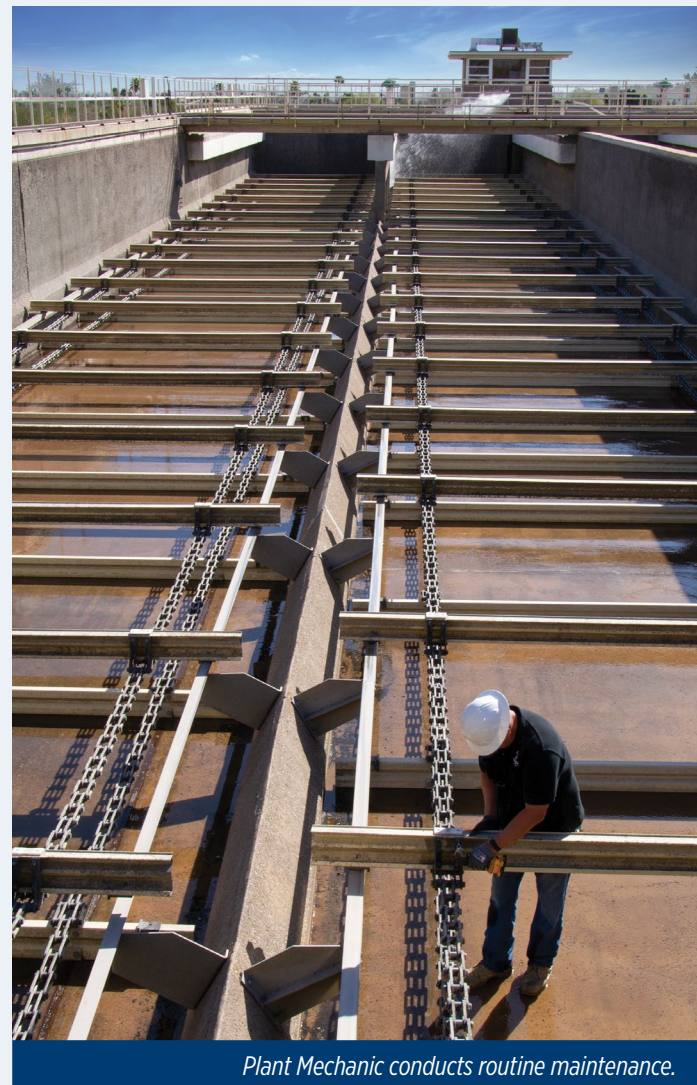
Tempe’s flood irrigation program provides service to 16 city parks and approximately 850 customers, and consists of over 37 miles of irrigation mains, 1,000 irrigation valves and 280 standboxes and standpipes.

Tempe’s wastewater collection system collects and conveys wastewater to the 91st Avenue Wastewater Treatment Plant in Phoenix, Arizona, co-owned by the City of Tempe and several other local municipalities, for treatment. Tempe’s wastewater collection system includes 481 miles of collection mains, 10,717 manholes and 36,164 service connections.

The operations and maintenance of the water distribution, wastewater collection, stormwater conveyance, flood irrigation and all respective appurtenances, is performed by highly-skilled Tempe employees. The work performed by these employees ensures the safe and reliable transport and delivery of these waters, while protecting the safety of customers, residents and employees, 24 hours a day, 365 days a year.



Plant Operator monitors filtration process.



Plant Mechanic conducts routine maintenance.



Utility Services Technician preforms routine fire hydrant maintenance.

Environmental Services Section

The Environmental Services Section manages programs required under the Safe Drinking Water Act, Clean Water Act, Clean Air Act and many other federal, state and local environmental laws and regulations. Environmental Services operations include a state-

certified water quality laboratory, programs to manage regulatory compliance, inspections, backflow prevention and sampling requirements, and water quality planning initiatives.

Compliance and Process Control Testing

Tempe operates a state-certified water quality laboratory that conducts analysis on potable and non-potable water for regulated and unregulated constituents. Water samples are collected from the surface water plants, groundwater wells, water distribution system and water storage tanks, then analyzed to ensure compliance with water quality regulations.

Tempe routinely conducts process control sampling and analysis to allow for continued optimization throughout the system to ensure high water quality and to strategically implement projects for the capital improvement program.

Water Resources

Tempe's water resources portfolio consists primarily of renewable resources that include surface water and groundwater consisting of safe-yield groundwater and surface water previously stored in groundwater aquifers.

conservation and efficiency related information and data, tools and personalized assistance that can help reduce water waste and increase water efficiency throughout the water service area. These resources can be found on tempe.gov/conservation.

The Water Conservation Program is more than a regulatory requirement; it illustrates Tempe's dedication to educating our community on the many ways they can take proactive actions to ensure Tempe maintains sufficient water to meet its needs now and into the future. Over the past 20 years, proactive water conservation efforts have resulted in more than a 10% decrease in the demands of the Tempe Water Service Area. Tempe is dedicated to providing customers with access to water

Investments in the Water Conservation Program include rebate and grant programs, implementation of Advanced Metering Infrastructure, access to the WaterSmart Customer Portal at no additional cost to customers, and proactive resource planning that increases Tempe's resiliency to drought and climate change. Using water wisely now helps maintain low water rates and reduces the potential need for supplemental water supplies in the future.



Environmental Quality Specialist conducts process pond inspection.



Instrumentation and Control Technician inspects meter at well site.



Water Program Specialist conducts conservation consultation.

Contaminants in Drinking Water

In order to ensure that potable water is safe to drink, the United States Environmental Protection Agency (EPA) prescribes regulations that limit the levels of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water. Drinking water, including bottled water, may reasonably be expected to contain low levels of some contaminants. The levels of contaminants in Tempe's potable water are largely determined by the source water, which can vary from year-to-year depending on watershed conditions, reservoir storage and the volume of groundwater pumped. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants in tap water, and potential health effects, can be obtained by visiting the EPA website epa.gov/SafeWater. Information on bottled water can be obtained from the FDA by calling 888-INFO FDA (888-463-6332).

Sources of raw water, for both tap and bottled, include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels, it can dissolve naturally occurring minerals and accumulate

substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:

- Microbial contaminants such as viruses and bacteria that may be from wastewater or septic systems, agricultural livestock operations or wildlife;
- Inorganic contaminants such as salts and metals that occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;
- Pesticides and herbicides that may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses;
- Organic chemical contaminants including synthetic and volatile organics that are by-products of industrial processes and petroleum production from gas stations, urban stormwater runoff and septic systems; and
- Radioactive contaminants that can be naturally-occurring or can be the result of oil and gas production and mining activities.

Water Treatment Plant



South Tempe Water Treatment Plant treats water to highest quality standards.

Drinking Water Quality

The following tables contain regulated contaminants that were required to be monitored and were detected in Tempe's drinking water in 2021. The tables contain the name of each contaminant detected, the highest concentration or level allowed by regulation, the ideal goals for public health, the amount detected in Tempe's water and major sources of such contamination. Certain contaminants require monitoring less than one time per year, because concentrations of these contaminants are not expected to vary significantly from year to year. For contaminants that were not required to be tested in 2021, this report depicts results from the most recent required testing and the year the testing occurred. In 2021, Tempe maintained compliance with all SDWA Maximum Contaminant Levels (MCLs).

Definitions and Acronyms

Action Level (AL): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a public water system shall follow.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. Addition of a disinfectant is necessary to control microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Non-Detect (ND): Not detected in samples.

Not Applicable (N/A): Does not apply.

Parts per million (ppm) or milligrams per liter (mg/L): Units used to measure the concentration of a constituent found in water. One ppm is approximately equal to one half gallon of water in an Olympic size swimming pool.

Parts per billion (ppb) or micrograms per liter (µg/L): Units used to measure the concentration of a constituent found in water. One ppb is one thousand times less than one ppm. One ppb is approximately equal to one drop of water in an Olympic size swimming pool.

Picocuries per liter (pCi/L): A measure of radioactivity.

Running Annual Average (RAA): The average of analytical results for samples taken during the previous four calendar quarters.

Locational Running Annual Average (LRAA): RAA for a specified location.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Variations and Exemptions: State or EPA permission to not meet a MCL or a treatment technique under certain conditions.



Chemist performs a water test.

2021 Regulated Detected Contaminants

Constituent	Unit	MCL	MCLG	Range	Violation (Yes or No)	Major Sources
Arsenic	ppb	10	0	ND - 5	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronic production waste.
Barium	ppm	2	2	0.06 - 0.09	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
Chlorine	ppm	4.0 (MRDL)	4.0 (MRDLG)	0.05 - 1.0	No	Disinfectant added to control microbial contaminants.
Chromium (Total)	ppb	100	100	ND - 9	No	Erosion of natural deposits.
Fluoride	ppm	4.0	4.0	0.16 - 1.0	No	Erosion of natural deposits; water additive which promotes strong teeth.
Adjusted Gross Alpha	pCi/L	15	0	ND - 2.0	No	Erosion of natural deposits.
Nitrate	ppm	10	10	ND - 7	No	Runoff from fertilizer use.
Selenium	ppb	50	50	ND - 2	No	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines.
Tetrachloroethylene	ppb	5	0	ND - 0.6	No	Discharge from factories and dry cleaners.
Trichloroethylene	ppb	5	0	ND - 0.7	No	Discharge from metal degreasing sites and other factories.
Total Coliform	percent	TT ¹	N/A	0.8	No	Naturally present in the environment.
Total Organic Carbon	ppm	TT	N/A	ND - 3.1	No	Naturally present in the environment.
Uranium	ppb	30	0	ND - 7	No	Erosion of natural deposits.

¹ Total Coliform detected in greater than five percent of the samples collected each month requires an assessment to investigate its source

Arsenic - While Tempe's drinking water meets EPA's standard for arsenic, it does contain low levels of this element. EPA's standard balances the current understanding of arsenic's possible health effects against the cost to remove arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a metal known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Nitrate - Nitrate in drinking water at levels above 10 ppm is a health risk for infants less than six months of age. High nitrate levels in drinking water can cause cyanotic newborn or "blue baby" syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, ask for advice from your healthcare provider.

Fluoride - In addition to compliance sampling, fluoride levels are monitored daily at both treatment plants and reported to the Arizona Department of Health Services, monthly, for oral health monitoring. The range reported is combined results from the daily treatment plant and system monitoring.

Constituent	Unit	MCL	Highest Value	Lowest monthly % meeting limit	Violation (Yes or No)	Major Sources
Turbidity	NTU (Nephelometric Turbidity Unit)	TT = 1; and not less than 95% ≤ 0.3 NTU	0.1	100%	No	Soil runoff into canals.

Turbidity - Turbidity is a measure of the cloudiness of water. Turbidity is monitored because it is a good indicator of water quality. High turbidity can reduce the effectiveness of disinfectants.

Constituent	Unit	MCL	Highest LRAA	Range (single sample)	Violation (Yes or No)	Major Sources
Total Trihalomethanes (TTHM)	ppb	LRAA of 80	55	2.9 - 72	No	By-products of drinking water chlorination.
Total Haloacetic Acids (HAA)	ppb	LRAA of 60	23	ND - 41	No	

Constituent	Unit	Action Level	90th Percentile Result	Number of results above action level	Violation (Yes or No)	Major Sources
Copper	ppm	1.3	0.20	0	No	Corrosion of household plumbing systems; erosion of natural deposits.
Lead	ppb	15	5	0	No	Corrosion of household plumbing systems; erosion of natural deposits.

51 Households were tested for lead and copper.

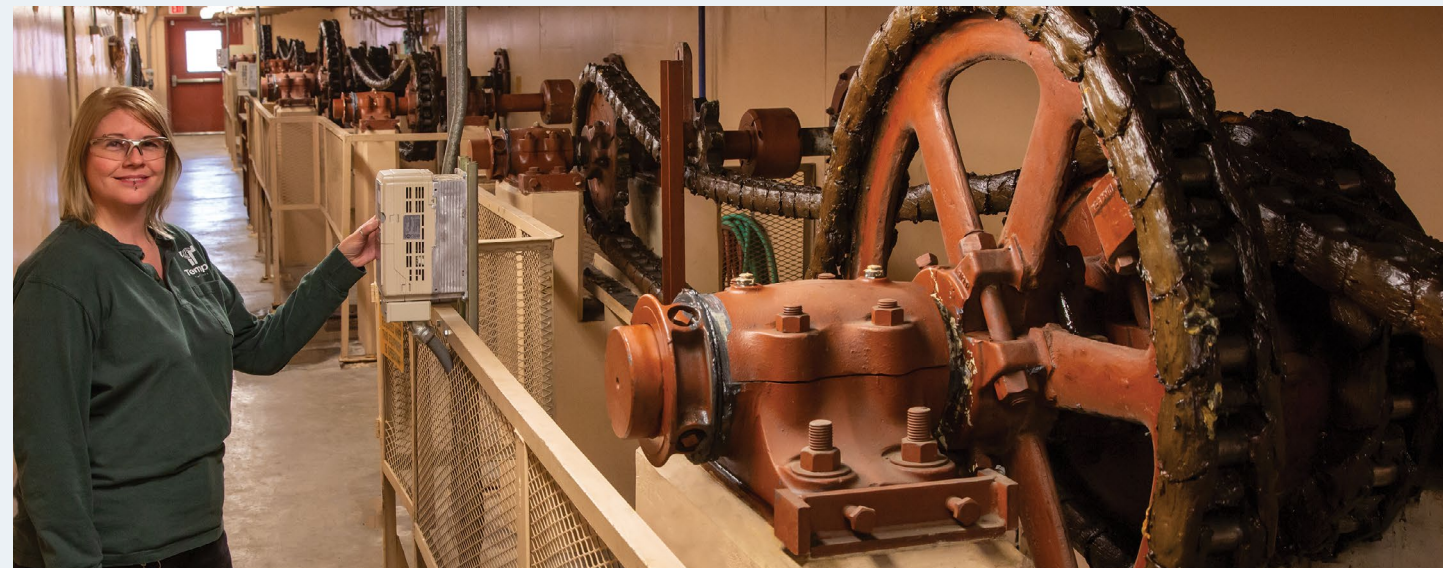
Lead - If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Tempe is responsible for providing high quality drinking water but cannot control the variety of materials used in home plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the EPA website [epa.gov/SafeWater/lead](https://www.epa.gov/safewater/lead).

The EPA published the Lead and Copper Rule Revisions (LCRR) in the Federal Register on January 15, 2021. The LCRR became effective

on December 16, 2021, and public water systems, including the City of Tempe, will be required to comply with the rule by October 16, 2024. The LCRR includes multiple new requirements for water systems, focused on the following six key areas further reducing potential exposure to lead in drinking water and improving public education regarding lead:

- Identifying areas most impacted.
- Strengthening treatment requirements.
- Systematically replacing lead service lines.
- Increasing sample reliability.
- Improving risk communication.
- Protecting children in schools and childcare facilities.

In preparation for the LCRR, Tempe is working with water quality experts and regulatory agencies to develop and implement a LCRR compliance strategy and ensure compliance with the rule revisions by October 2024.



Plant Operator operates mechanical treatment equipment.

Public Notification of an Unmet Monitoring Requirement

While this is not an emergency, you, as our customers, have a right to know about the following occurrence and corrective action. In September 2017, a low level of Di(2-ethylhexyl) phthalate (DEHP) was detected in one of Tempe's groundwater sources. Potential health effects from long-term exposure above the maximum contaminant level include reproductive difficulties, liver problems and increased risk of cancer. Tempe was required to increase monitoring for DEHP at the original source and missed one

monitoring event in the third quarter of 2021. DEHP has not been detected in any other water sources used by the City of Tempe and has not been detected in the original source since 2017. Tempe has no reason to believe the missed monitoring had an impact on public health and no actions are necessary for customers to take. Tempe has informed the regulatory agencies and scheduled the required monitoring for this compound accordingly through 2024.

Special Information for Immunocompromised People

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer, undergoing chemotherapy, who have undergone organ transplants, with human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS), or with other

immune system disorders can be particularly at risk for infection. Persons in these categories or their caregivers should seek advice regarding drinking water from their healthcare providers.



Water Quality Specialist performs water distribution sampling.

Cryptosporidium

Cryptosporidium is a microbial pathogen found in surface water throughout the United States. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immunocompromised people, infants, small children and the elderly are at greater risk of developing life-threatening illness. Although filtration removes Cryptosporidium, the most commonly used filtration methods cannot guarantee 100% removal. Monitoring indicates, although infrequent, these organisms are

present in Tempe's source water. Current test methods do not identify if the organisms are dead or if they are capable of causing disease. Based on source water monitoring for Cryptosporidium at Tempe's two water treatment plants between 2015 and 2017, Tempe is required to maintain ongoing documentation of effective disinfection practices. EPA and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available through the EPA website [epa.gov/SafeWater](https://www.epa.gov/safewater).

Source Water Assessment Summary

Arizona Department of Environmental Quality (ADEQ) evaluates each water source used by public water systems in Arizona. These evaluations assess the hydrogeology of drinking water sources to determine the quality of groundwater being drawn into wells, the watersheds supplying surface water and the surveyed land being used for activities occurring near drinking water sources.

ADEQ completed an assessment of the surface waters and groundwater wells for Tempe's public water system in 2004. Based on the information available on the hydrogeologic settings and the adjacent land uses in the specified proximity of the drinking water source(s), ADEQ has given a high risk designation for the degree to which this public water system drinking water source(s) are protected. A designation of high risk indicates there

may be additional source water protection measures which can be implemented on the local level. This does not imply that the source water is contaminated, nor does it mean that contamination is imminent. Rather, it simply states that land use activities or hydrogeologic conditions exist that make the source water susceptible to possible contamination.

Tempe regularly conducts monitoring of all drinking water sources to ensure that nearby land use has not impacted water quality. The complete Source Water Assessment is available for review at ADEQ, 1110 W. Washington St., Phoenix, AZ 85007, or an electronic copy may be requested by phone: 602-771-4597. For more information visit the ADEQ website at azdeq.gov/SourceWaterProtection.

Constituents of Frequent Interest to Customers

Constituent	Units	Average Value	Range of Values
Hardness	ppm	240	180 - 520
Hardness	grains/gallon	14	11 - 30
Radon (2008 and 2011)	pCi/L	346	ND - 704

Radon - Radon is a radioactive gas that occurs naturally in groundwater and is released from water into the air during household use. Compared to radon entering the home through soil, radon entering the home through tap water will, in most

cases, be a nominal source. For additional information, call Arizona Radiation Regulatory Agency at 602-255-4845 or contact EPA's Radon Hotline 800-767-7236.

Capital Improvement Program (CIP)

The Water Utilities Division plans and manages a comprehensive asset management program that includes assessment and improvements to all aspects of both water and wastewater utility operations. This program includes projects designed to ensure Tempe is reliably providing the highest quality water to its customers and efficient wastewater collection and treatment at the lowest reasonable cost, while meeting all applicable federal, state and local rules, regulations and statutes. CIP planning for Fiscal Year 2022-2023 through Fiscal Year 2026-2027, for both water and wastewater, is nearly \$500 million over the five-year planning period and will be considered for Tempe City Council approval later this year.

Highlights of the water treatment and water distribution CIP include rehabilitation and improvements to the following major areas of Water Utilities operation.

- Water Treatment Plant (WTP) asset maintenance and upgrades.
- Transmission and distribution system replacements and improvements.
- Water system pumping stations, reservoirs and tanks projects.
- Wells – asset maintenance and new production.



Utilities Services Technicians clean and maintain stormwater infrastructure.

Protect Tempe's Waterways

Stormwater runoff does not go to a treatment plant before entering retention basins, washes, rivers or lakes. Stormwater runoff can collect dirt, litter, oil, grease, pet waste, chemicals and any other pollutant as it flows over surfaces such as roads, parking lots, sidewalks, driveways or lawns. Follow the tips found at

tempe.gov/StormwaterTips to help reduce pollutants from entering the stormwater system and ultimately protect waterways. These include picking up after pets, adopting a path or street, and utilizing the Household Products Collection Center. For more information visit tempe.gov/hpcc.

Operating Budget

Every two years, Municipal Utilities conducts a cost of service study to help determine what, if any, adjustments are needed to recover the costs of water and wastewater services. Periodic review of cost-based rates, fees and charges is an important component of a well-managed and operated water utility. As utility costs

throughout the country continue to rise, staff is committed to managing costs and staying efficient, while upholding Tempe's commitment to a sustainable future. The Water Utilities Division Fiscal Year 2021-2022 Operating Budget is \$104,552,904.

Customer Services

The Customer Services Section is responsible for Municipal Utilities billing and customer service operations. Tempe invested in Advanced Metering Infrastructure (AMI) for over 43,000 water meters, which provides hourly water consumption data and billable reads. Customers can access their water usage data by visiting tempe.gov/WaterSmart. Tempe offers multiple ways to pay for the utility services and more information on payment options, rates and other utility billing-related questions can be found at tempe.gov/CustomerService.



If you have questions about the information provided in this report, water quality or Tempe's water or wastewater systems, call the City of Tempe at 480-350-4311. Residents are also invited to address the Tempe City Council during regularly scheduled Council meetings. City Council meetings are usually held every other Thursday and meeting schedules and agendas may be found online at tempe.gov/clerk, or by calling 480-350-4311. For additional information, visit Tempe's web site at tempe.gov/WaterQuality, visit tapintoquality.com or see information provided by the EPA at epa.gov/SafeWater.

